

✓ Exercise 3: Control Flow Statements

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[Colab Notebook Link](#)

1. Write a program to check if a given number is positive, negative, or zero.

```
num = float(input("Enter a number: "))
if num > 0:
    print(f"{num} is Positive")
elif num < 0:
    print(f"{num} is Negative")
else:
    print(f"{num} is Zero")
```

```
↵ Enter a number: -9
-9.0 is Negative
```

2. Write a program to find the maximum of two numbers.

```
def maximum(a, b):
    return a if a > b else b

num1 = int(input("Enter first number: "))
num2 = int(input("Enter second number: "))
print("Maximum:", maximum(num1, num2))
```

```
↵ Enter first number: 50
Enter second number: 30
Maximum: 50
```

3. Write a program to check if a given year is a leap year.

```
def is_leap_year(year):
    return (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0)

year = int(input("Enter a year: "))
if is_leap_year(year):
    print(f"{year} is a leap year.")
else:
    print(f"{year} is not a leap year.")
```

```
↵ Enter a year: 2028
2028 is a leap year.
```

4. Write a program to print the Fibonacci sequence up to a given number of terms.

```
def fibonacci(n):
    fib_seq = [0, 1]
    while fib_seq[-1] + fib_seq[-2] <= n:
        fib_seq.append(fib_seq[-1] + fib_seq[-2])
    return fib_seq

input_number = int(input("Enter a number: "))
print(fibonacci(input_number))
```

```
↵ Enter a number: 10
[0, 1, 1, 2, 3, 5, 8]
```

5. Write a program to find the factorial of a given number.

```
def factorial(n):
    return 1 if n == 0 else n * factorial(n-1)

input_number = int(input("Enter a number: "))
print(f"Factorial of {input_number} is {factorial(input_number)}")
```

```
↵ Enter a number: 4
Factorial of 4 is 24
```

6. Write a program to calculate the sum of all numbers from 1 to 100.

```
print("Sum from 1 to 100:", sum(range(1, 101)))
```

```
↵ Sum from 1 to 100: 5050
```

7. Write a program to print the multiplication table of a given number.

```
num = int(input("Enter a number: "))
for i in range(1, 11):
    print(f"{num} x {i} = {num * i}")
```

```
↵ Enter a number: 13
13 x 1 = 13
13 x 2 = 26
13 x 3 = 39
13 x 4 = 52
13 x 5 = 65
13 x 6 = 78
13 x 7 = 91
13 x 8 = 104
13 x 9 = 117
13 x 10 = 130
```

8. Write a program to find the prime numbers between 1 and 100.

```
for num in range(2, 101):
    if all(num % i != 0 for i in range(2, int(num ** 0.5) + 1)):
        print(num, end=" ")
```

```
↵ 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97
```

9. Write a program to calculate the average of a list of numbers.

```
nums = list(map(float, input("Enter numbers separated by spaces: ").split()))
print("Average:", sum(nums) / len(nums))
```

```
↵ Enter numbers separated by spaces: 4 1 9 5 6
Average: 5.0
```

10. Write a program to count the number of vowels in each string.

```
def count_vowels(s):
    return sum(1 for c in s.lower() if c in "aeiou")

input_string = input("Enter a string: ")
print("No. of vowels =", count_vowels(input_string))
```

```
↵ Enter a string: my name is anish
No. of vowels = 5
```

11. Write a function to calculate the area of a circle given its radius.

```
import math
r = float(input("Enter radius: "))
print("Area:", math.pi * r ** 2)
```

```
↵ Enter radius: 7
Area: 153.93804002589985
```

12. Write a function to check if a given number is even or odd.

```
def check_even_odd(n):
    return "Number is Even" if n % 2 == 0 else "Number is Odd"

num = int(input("Enter a number: "))
print(check_even_odd(num))
```

```
↵ Enter a number: 8
Number is Even
```

13. Write a function to reverse a given string.

```
s = input("Enter a string: ")
print("Reversed:", s[::-1])
```

```
↻ Enter a string: desserts
    Reversed: stressed
```

14. Write a function to check if a given string is a palindrome.

```
def is_palindrome(s):
    return "Palindrome" if s == s[::-1] else "Not a Palindrome"
```

```
print(is_palindrome("racecar"))
print(is_palindrome("hello"))
```

```
↻ Palindrome
    Not a Palindrome
```

15. Write a function to calculate the square root of a given number.

```
num = float(input("Enter a number: "))
print("Square root:", math.sqrt(num))
```

```
↻ Enter a number: 9
    Square root: 3.0
```

16. Write a function to find the greatest common divisor (GCD) of two numbers.

```
a, b = map(int, input("Enter two numbers: ").split())
print("GCD:", math.gcd(a, b))
```

```
↻ Enter two numbers: 25 15
    GCD: 5
```

17. Write a function to check if a given number is a perfect square.

```
num = int(input("Enter a number: "))
print(f"{num} is a perfect square" if math.isqrt(num) ** 2 == num else f"{num} is not a perfect square")
```

```
↻ Enter a number: 25
    25 is a perfect square
```

18. Write a function to generate a list of prime numbers up to a given limit.

```
limit = int(input("Enter limit: "))
primes = [num for num in range(2, limit+1) if all(num % i != 0 for i in range(2, int(num ** 0.5) + 1))]
print("Prime numbers:", primes)
```

```
↻ Enter limit: 20
    Prime numbers: [2, 3, 5, 7, 11, 13, 17, 19]
```

19. Write a function to check if a given string is an anagram of another string.

```
s1 = input("Enter first string: ").lower()
s2 = input("Enter second string: ").lower()
print("Anagram" if sorted(s1) == sorted(s2) else "Not an anagram")
```

```
↻ Enter first string: harry potter
    Enter second string: throat perry
    Anagram
```

20. Write a function to calculate the factorial of a given number using recursion.

```
def factorial(n):
    return 1 if n == 0 else n * factorial(n - 1)
```

```
num = int(input("Enter a number: "))
print("Factorial:", factorial(num))
```

```
↻ Enter a number: 4
    Factorial: 24
```